

110TH CONGRESS  
1ST SESSION

# H. R. 3877

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## AN ACT

To require the Director of the National Institute of Standards and Technology to establish an initiative to promote the research, development, and demonstration of miner tracking and communications systems and to promote the establishment of standards and other measurement services regarding underground communications to protect miners in the United States.

1       *Be it enacted by the Senate and House of Representa-*  
2       *tives of the United States of America in Congress assembled,*

3       **SECTION 1. SHORT TITLE.**

4       This Act may be cited as the “Mine Communications  
5       Technology Innovation Act”.

6       **SEC. 2. FINDINGS.**

7       Congress finds the following:

8               (1) The failure of miner tracking and commu-  
9       nications devices or lack thereof in mines severely  
10      hampers rescue efforts in the event of emergencies.

11              (2) Mines, particularly underground mines,  
12      have properties that present unique technical chal-  
13      lenges for the integration of currently available  
14      tracking and communications systems. These prop-  
15      erties include the lack of a clear path or open air  
16      which is required for radio signals and WiFi. Addi-  
17      tionally, because coal is an absorptive material, less  
18      than 10 percent of the radio spectrum that is used  
19      above ground can be used underground. A fraction  
20      of that (only about 1 percent) radio spectrum is ac-  
21      tually allocated for commercial communications pur-  
22      poses. As a consequence, the availability of miner  
23      communication equipment is severely limited.

24              (3) Research and experience have shown that  
25      communications and tracking systems may not work

1       equally well in every mine or in every emergency sit-  
2       uation, and therefore several different systems may  
3       be necessary for development and integration.

4           (4) Because of the serious challenges of the  
5       mine environment and the limited market provided  
6       by the mining industry, much needed technology has  
7       not yet been developed by the private sector or is not  
8       commercially available in the United States.

9           (5) Furthermore, due to the regulatory struc-  
10      ture of the industry and the lengthy approval proc-  
11      ess for mine tracking and communications systems,  
12      research must be accelerated so that next generation  
13      technology can be quickly and efficiently integrated  
14      into mines to protect the safety of miners.

15          (6) The National Institute of Standards and  
16      Technology is well positioned to help accelerate the  
17      development of mining tracking and communications  
18      technology. The National Institute of Standards and  
19      Technology has a long history of working in conjunc-  
20      tion with industry to invest in longer-term, high-risk  
21      research which yields national benefits far beyond  
22      private payoff. Further, the National Institute of  
23      Standards and Technology builds partnerships with  
24      industry to leverage existing research and develop-  
25      ment to drive next generation technology.

1           (7) The National Institute of Standards and  
 2           Technology is well-positioned to accelerate develop-  
 3           ment of consensus mining communications standards  
 4           given the extensive work that the organization has  
 5           done in the field of emergency communications to  
 6           develop standards and technologies for interoperable  
 7           wireless telecommunications and information sys-  
 8           tems.

9           (8) In developing such standards, the National  
 10          Institute of Standards and Technology should work  
 11          in cooperation with the National Institute for Occu-  
 12          pational Safety and Health and the Mine Safety and  
 13          Health Administration, and other relevant public  
 14          and private stakeholders, to build on existing tech-  
 15          nology and knowledge regarding mine communica-  
 16          tions systems.

17 **SEC. 3. MINE COMMUNICATIONS AND TRACKING RE-**  
 18 **SEARCH AND DEVELOPMENT PROGRAM AU-**  
 19 **THORIZATION.**

20          (a) ESTABLISHMENT.—The Director of the National  
 21          Institute of Standards and Technology shall provide for  
 22          the establishment of a program of research, development,  
 23          and demonstration that includes the establishment of best  
 24          practices, adaptation of existing technology, and efforts to

1 accelerate the development of next generation technology  
2 and tracking systems for mine communications.

3 (b) COORDINATION.—In carrying out this section, the  
4 Director shall coordinate with relevant Federal agencies  
5 and industry to evaluate areas of research and develop-  
6 ment and best practices that will be most promising in  
7 protecting miner safety.

8 (c) OPTIONAL FOCUS.—In establishing this program,  
9 the Director may focus on the following communications  
10 and tracking system characteristics:

11 (1) Systems that are likely to work in emer-  
12 gency situations.

13 (2) Systems that work in coal mines, with spe-  
14 cial attention paid to deep underground coal mines.

15 (3) Systems that provide coverage throughout  
16 all areas of the mine.

17 (4) Hybrid systems that use both wireless and  
18 infrastructure based systems.

19 (5) Functionality for 2-way and voice commu-  
20 nications.

21 (6) Systems that serve emergency and routine  
22 communications needs.

23 (7) The ability to work with existing legacy sys-  
24 tems and to be quickly integrated.

1           (8) Propagation environment characterization,  
2           performance metrics, and independently derived vali-  
3           dation tests to verify performance for standards de-  
4           velopment.

5   **SEC. 4. STANDARDS REGARDING UNDERGROUND COMMU-**  
6                           **NICATIONS.**

7           Consistent with Office of Management and Budget  
8   Circular A–119, the Director of the National Institute of  
9   Standards and Technology shall work with industry and  
10   relevant Federal agencies to develop consensus industry  
11   standards for communications in underground mines. The  
12   Director shall also develop and provide any needed meas-  
13   urement services to support implementation of these  
14   standards. In their efforts to help develop these standards  
15   and related measurement services, the following issues  
16   should be addressed:

17           (1) The appropriate use of frequency bands and  
18           power levels.

19           (2) Matters related to interoperability of sys-  
20           tems, applications, and devices.

21           (3) Technology to prevent interference.

22   **SEC. 5. AUTHORIZATION OF APPROPRIATIONS.**

23           There are authorized to be appropriated to the Direc-  
24   tor of the National Institute of Standards and Technology  
25   such sums as are necessary for carrying out this Act for

1 fiscal years 2009 and 2010, to be derived from amounts  
2 authorized under section 3001 of the America COM-  
3 PETES Act.

Passed the House of Representatives October 29,  
2007.

Attest:

*Clerk.*

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